

Note on the Spectrum of the Great Nebula in Orion.
By E. W. Maunder.

As I have recently been informed that an observation of mine of the brightest line in the spectrum of the Great Nebula in *Orion* has been somewhat misunderstood, it being supposed, as I am told, that I had claimed to have seen this line as distinctly a fluted band, I have thought it would be well if I explained it to the Society.

The observation in question was made on February 18, 1884, in the course of my usual work of the measurement of the displacement of the lines in stellar spectra. I was using the half-prism spectroscope in the direct position on the South-East equatorial of 12·8 inches aperture, and I had endeavoured, not very successfully, to measure the displacement of the bright F line in the spectrum of the nebula, using for the purpose a dispersion of one "half-prism." I then turned to the line of the nebular spectrum near λ 5005, and found this very much brighter than the F line. It had occurred to me, as this line in the nebular spectrum had sometimes been supposed to be due to nitrogen, the spectrum of which shows a very bright pair of lines at this place, that it would be well to ascertain if the nebular line could be divided, so I put in a second "half-prism," and examined the line at λ 5005 again. The dispersion now used was equivalent to that of sixteen flint prisms of 60°, or about 80° from A to H. The two nitrogen lines were widely separated, and though differing in wave-length only by three tenth-metres, their angular separation was 7', or more than two revolutions of the eyepiece micrometer (one hundred revolutions to the inch). The slit was very narrow, about 0''·5 of arc, or $\frac{1}{2000}$ inch, and the spectroscope had been very carefully focussed during the day on the same part of the solar spectrum, and with the same dispersion. With this dispersion and slit the three principal lines of the nebular spectrum, viz. F, λ 5005, and the bright line between them, were seen as very narrow bright lines. But none of the three nebular lines were perfectly sharp; each showed a slight raggedness at both edges; but in the case of the line near λ 5005 it was clear that this fringe or raggedness was more developed towards the blue than towards the red. In the original record of the observation published in the Greenwich Observations for 1884, my note reads as follows:—"None of the lines in the spectrum of the nebula are, however, very sharp. λ 5005 showed a faint fringe mainly on the side nearer the blue." In the case of the two other lines, they were not bright enough for it to be possible to ascertain whether the fringes were symmetrical or not.

But λ 5005 was clearly a single line. There was no trace of any bright line or series of bright lines close to it on either side; no trace of a fluting properly so-called. The entire line, fringes and all, was only a fraction of a tenth-metre in total breadth; all that was remarked about it was:—

- (1) That it was a single, not a double, line.
- (2) That it was not quite sharp at either edge.
- (3) That it was more shaded on the more refrangible edge than on the less refrangible.

The power of the eyepiece used was 14 on a viewing-telescope of 10.5 inches focal length.

The observation therefore does not afford any strong confirmation of Mr. Lockyer's view that this line in the spectrum of nebulae is due to the fluting of magnesium, but at the same time it is not absolutely inconsistent with it.

Observations of the Planet Iris and Comparison Stars, made with the Meridian Circle at Dunsink. By Arthur A. Rambaut, M.A., Assistant Astronomer at Dunsink Observatory.

(Communicated by Sir R. S. Ball.)

Early in September 1888, we received from Dr. Gill a list of twenty-eight stars, which he proposed to use as comparison stars for a determination of the parallax of the planet *Iris*, with a request that we should determine their places with our meridian circle, and that we should at the same time procure as many meridian observations as possible of the planet.

This work was commenced at once on receipt of Dr. Gill's communication, but owing to the unfavourable state of the weather the list, to which two stars were added during the progress of the work, was not completed till January 10 of this year.

The places of the stars given below are strictly differential, both in right ascension and declination, as the clock error and the equator point of the circle were always determined by observations of a few stars selected from the *Berliner Jahrbuch*. These stars, which were chosen as being conveniently situated in regard to the time of their culmination, and because their zenith distances did not greatly differ from that of Dr. Gill's stars, are contained in the following list:—